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Xerox[®] DocuMate[®] 4799/4790

Performance and Image Quality Expectations Guide

Including general specifications for
the Xerox[®] DocuMate[®] 4700



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Preface

General Purpose and Audience

This document provides a comparative evaluation of the features and characteristics of the Xerox® DocuMate® 4799 against a reference scanner selected by Xerox (FreeFlow® Scanner 665), and includes additional functional specifications and/or descriptions of the Xerox DocuMate 4790 and DocuMate 4700 (refer to *Section 1: Versatile Scanning Solution for Large Documents*) scanners. It is designed to help customers understand the capabilities and specifications of the Xerox DocuMate 4799 and DocuMate 4790 prior to making a buying decision.

Important Note

The Xerox DocuMate range of scanners deliver high-quality black and white and office-quality color scanned documents that **may not be suitable for all scanning applications and/or customer environments**. As such, Customers should carefully evaluate the capabilities and image quality characteristics of the specific Xerox DocuMate scanner they are considering to ensure the scanner is suitable for their environment and Xerox printing system(s). The guidelines outlined herein are provided for informational use only and are not intended to be comprehensive of all factors that should be considered.

Customers who are considering the Xerox DocuMate range of scanners as a replacement for an existing FreeFlow Scanner 665 **should not expect to achieve the same levels of image quality and productivity for most scanning applications**. However, the Xerox DocuMate scanners are still among the best quality scanners supported for use with FreeFlow Makeready on the market today.

FreeFlow Makeready Scanner Support

For customers who require assistance selecting a suitable scanner to use with FreeFlow Makeready® and/or are interested in purchasing scanning hardware directly from Xerox, Xerox offers the *DocuMate* range of scanners.

As the newest additions to the Xerox DocuMate product range, the *Xerox DocuMate 4799* and *DocuMate 4790* provide advanced document handling and image processing technology and are designed for easy operation in a variety of environments with complex document scanning requirements. The Xerox DocuMate 4799 also supports sRGB, making it color-space compatible with the Xerox iGen™ digital press.

Additional Resources

- Xerox DocuMate 4799 and 4790 Data Sheets
- Xerox DocuMate 4700 Data Sheet
- Xerox DocuMate 4799 and 4790 User Guides
- Xerox DocuMate 4700 User Guide
- FreeFlow Makeready 9.0 Customer Expectations Guide (CED)

Introduction

Since the initial introduction of the Xerox® DocuMate® product line, Visioneer has been combining its leading scanner technology with the brand recognition of Xerox to deliver a broad range of scanning solutions for workgroup and mid-volume production environments. Xerox DocuMate high-performance business scanners and imaging software solutions offer customers speed, image quality, advanced paper handling and ease-of-use with exclusive Visioneer OneTouch® Technology.

Designed for mid-volume production environments, the Xerox DocuMate 4799 and DocuMate 4790 continue this tradition by delivering high-quality black and white and office-quality color scanned documents to Xerox printing systems.

The Xerox DocuMate 4799 and DocuMate 4790 are integrated with FreeFlow Makeready® via the TWAIN interface (TWAIN version 1.9 or above), which may be accessed directly from the Makeready PC. TWAIN is a widely recognized standard that computers use to receive images from scanners, digital cameras, and other digital devices.

Xerox DocuMate 4799

The Xerox DocuMate 4799 delivers superior reliability and the most advanced functionality for high-production environments. By employing three advanced sensor systems: ultrasonic double feed detection, stapled document detection and intelligent feed control, this innovative scanner ensures that documents of various sizes can be stacked together in the automatic feed tray and will be processed at scan speeds up to 112 pages per minute.

Key Features

- 112 ppm/224 ipm*
- A3 (11" x 17") paper size
- ADF holds 350 pages†
- Staples Document Detection
- 3 Ultrasonic Double Feed Detection Sensors
- Color Space compatibility with Xerox® iGen™ Digital Press
- Pre- and Post-Scan Imprinter (*sold separately*)
- Intelligent Feed Control
- Multi-Color Dropout
- Easy Maintenance

* Landscape US Letter and A4

† 20 lb., 75-80 g/m² paper

Xerox DocuMate 4790

The Xerox DocuMate 4790 is a dependable scanner for both large-volume and distributed scanning needs with a daily duty cycle of up to 10,000 sheets and scans up to 90 pages per minute. It is powered by Visioneer OneTouch scanning technology for simplifying scan jobs and workflows. The scanner also has an easy-to-read LCD screen with resolution, color mode, file type, processing and final destination of the scanned document.

Key Features

- 90 ppm/180 ipm*
- A3 (11" x 17") paper size
- ADF holds 200 pages†
- LCD Front Panel for job control, status and alerts
- Visioneer OneTouch® Scanning Buttons
- Stapled Document Detection
- Ultrasonic Double Feed Detection
- Pre-Imprinter
- Double Feed Skip Key
- Ionizer to reduce dust

* Landscape US Letter and A4

† 20 lb., 75-80 g/m² paper

For more information about the Xerox DocuMate 4799 and DocuMate 4790, including detailed product specifications, contact your local Xerox Sales Representative or visit us on the web at www.xerox.com.

Versatile Scanning Solution for Large Documents

Xerox DocuMate 4700

The Xerox DocuMate 4700 is an 11.7" x 17" flatbed scanner with a built-in USB hub. The hub enables the DocuMate 4700 to be connected directly to a PC and used as a stand-alone flatbed scanner, or an Automatic Document Fed (ADF) scanner can be connected through its USB port for added functionality.

When connected in tandem ('daisy-chain') with a Xerox DocuMate 4799 or DocuMate 4790, the Xerox DocuMate 4700 provides the ability to scan delicate or oversized (up to A3/11.7"x17") documents that would not otherwise be possible with the ADF alone. A "combo" scanner driver supplied with the DocuMate 4700 provides the ability to automatically switch between scanners to capture documents from either source without the need to manually disconnect and reconnect devices.

The Xerox DocuMate 4700 has been designed specifically for departmental or production scanning environments and may be a suitable option as a complement to the Xerox DocuMate 4799 and DocuMate 4790 for customers interested in undertaking a wider variety of scanning tasks.

Key Features

- A3 (11.7" x 17") USB Flatbed Scanner
- Versatile flatbed option for sheet-fed scanner or direct connect to PC
- Visioneer OneTouch® pre-programmed 'scan-to' destinations
- Hi-speed USB 2.0 interface (USB 1.1 compatible)

For more information about the Xerox DocuMate 4700, including detailed product specifications, contact your local Xerox Sales Representative or visit us on the web at www.xerox.com.

Specifications

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The following section provides an overview of the functional specifications of the Xerox DocuMate 4799 and DocuMate 4790 in comparison to the FreeFlow Scanner 665 (hereafter referred to as the “Reference Scanner”).

Specifications at a Glance

	Reference Scanner	Xerox DocuMate 4790	Xerox DocuMate 4799
Productivity (black & white/color)	●/●	●/○	●/○
Optical Resolution	●	●	●
Output Resolution	●	○	○
Output Bit Depth	○	●	●
Document Handling Sizes	○	●	●
Media Types	○	●	●
Tracy Capacity	○	○	●
Mixed Length	○	●	●
Document Glass	●	○	○
Error Handling	●	●	●
Duty Cycle	○	○	●
Overall	●	○	●

○ Fair ● Good ● Very Good

Specifications

	Reference Scanner	Xerox DocuMate 4790	Xerox DocuMate 4799
Scan Speed¹ (black & white, grayscale or color @ 400 and 600 dpi)	<p>400 dpi</p> <ul style="list-style-type: none"> 65 simplex images/minute, 20 duplex images/minute black & white 60 simplex images/minute, 20 duplex images/minute color <p>600 dpi</p> <ul style="list-style-type: none"> 65 simplex images/minute, 20 duplex images/minute black & white 40 simplex images/minute, 20 duplex images/minute color 	<p>400 dpi</p> <ul style="list-style-type: none"> 50 simplex images/minute, 100 duplex images/minute black & white 49 simplex images/minute, 67 duplex images/minute grayscale 35 simplex images/minute, 37 duplex images/minute color <p>600 dpi</p> <ul style="list-style-type: none"> 34 simplex images/minute, 69 duplex images/minute black & white 33 simplex images/minute, 35 duplex images/minute grayscale 14 simplex images/minute, 16 duplex images/minute color 	<p>400 dpi</p> <ul style="list-style-type: none"> 82 simplex images/minute, 157 duplex images/minute black & white 66 simplex images/minute, 66 duplex images/minute grayscale 39 simplex images/minute, 39 duplex images/minute color <p>600 dpi</p> <ul style="list-style-type: none"> 46 simplex images/minute, 89 duplex images/minute black & white 34 simplex images/minute, 32 duplex images/minute grayscale 17 simplex images/minute, 17 duplex images/minute color
Scan Method	Full Width Array (FWA) image sensor (single CCFL light source)	Dual Color Contact Image Sensor (CCFL light source), switchable black or white background	Dual Charge-Coupled Device (CCD) / white LED light source
Optical Resolution	600 dpi	600 dpi	600 dpi
Output Resolution	Up to 1200 dpi monochrome, 600 dpi color	Up to 600 dpi	Up to 600 dpi
Output Bit Depth	24-bit color, 1-bit black and white	24-bit color, 8-bit grayscale, 1-bit black and white	24-bit color, 8-bit grayscale, 1-bit black and white
Interface	Ultra Wide SCSI	Hi-speed USB 2.0 (1.1 compatible)	Hi-speed USB 2.0 (1.1 compatible)
Dimensions	31.3"(w) x 26.4"(d) x 13.9"(h) (795 x 671 x 353 mm)	18.5" (w) x 17.5"(d) x 13.4"(h) (468 x 444 x 339 mm)	18.7"(w) x 23"(d) x 13"(h) (474 x 585 x 329 mm)
Weight	97 lbs. (44 kg)	40 lbs. (18 kg)	55 lbs. (25 kg)
ADF Minimum Document Size	5.5" x 8.27" (140 mm x 165 mm)	1.9" x 2.8" (48 mm x 70 mm)	1.9" x 2.8" (48 mm x 70 mm)

	Reference Scanner	Xerox DocuMate 4790	Xerox DocuMate 4799
ADF Maximum Document Size	11.7" x 17" (297 x 432 mm)	11.7" x 17" (297 x 432 mm): custom lengths up to 100" (2,540 mm)	11.7" x 17" (297 x 432 mm): custom lengths up to 100" (2,540 mm)
ADF Capacity	100 sheets (20 lb., 75-80 g/m ² paper)	200 sheets (20 lb., 75-80 g/m ² paper)	350 sheets (20 lb., 75-80 g/m ² paper)
Document Glass	Up to 12" x 18" (305 mm x 457 mm)	Not available	Not available
Duty Cycle	3,500 pages/day	15,000 pages/day	40,000 pages/day

¹ Based on manufacture's specifications

Performance and Image Quality

3

The following section includes both objective and subjective criteria, which is intended to provide a comparative evaluation of the features and characteristics of the Xerox DocuMate 4799. The features and characteristics of this scanner, which serve as the test criteria, were logically split into two groups: *formalizable* (e.g. performance), which can be expressed numerically and *non-formalizable* (e.g. image quality), which represent general impressions.

Important Note

The Xerox DocuMate range of scanners deliver high-quality black and white and office-quality color scanned documents that **may not be suitable for all scanning applications and/or customer environments**. As such, Customers should carefully evaluate the capabilities and image quality characteristics of the specific Xerox DocuMate scanner they are considering to ensure the scanner is suitable for their environment and Xerox printing system(s). The guidelines outlined herein are provided for informational use only and are not intended to be comprehensive of all factors that should be considered.

Customers who are considering the Xerox DocuMate range of scanners as a replacement for an existing FreeFlow Scanner 665 **should not expect to achieve the same levels of image quality and productivity for most scanning applications**. However, the Xerox DocuMate scanners are still among the best quality scanners supported for use with FreeFlow Makeready on the market today.

For the purpose of the evaluation, the tests were performed using the Xerox DocuMate 4799 and the Reference Scanner using a set of first generation copies of original test patterns/images scanned directly to a PC running FreeFlow Makeready. The obtained scans were captured independent of applying image enhancement software, which might otherwise improve or enhance the appearance of the test patterns/images.

Note:

The following performance and image quality evaluation focuses on the Xerox DocuMate 4799 only. Customers interested in the Xerox DocuMate 4790 (or DocuMate 4700) should evaluate the features and characteristics of this scanner to determine if it is a suitable solution for their environment

Performance

The Xerox DocuMate 4799 (and DocuMate 4790), as well as the Reference Scanner, are equipped with Duplex *Automatic Document Feeders* (ADF), allowing them to scan multi-page, duplex (two-sided documents). The Xerox DocuMate 4799 achieves optimal throughput by scanning both sides of a document simultaneously through the use of dual-image sensors versus the Reference Scanner, which scans each side of a document independently using a single image sensor. The Reference Scanner also incorporates a stationary glass surface (flatbed) for scanning delicate or oversized (up to 12"x18") documents that cannot be accommodated via the ADF.

Other factors, such as the color depth and resolution (dpi – dots per inch) of the scanned image, as well as the scanning interface itself, also contribute to the overall speed of the scanner. The Reference Scanner was connected to the FreeFlow Makeready PC via an Ultra-Wide SCSI interface, which provides the best performance especially for high volume scanning operations (large data). The Xerox DocuMate 4799 utilizes a Hi-speed USB 2.0 interface, which offers plug-and-play convenience and is more widely used in the industry today.

FreeFlow Makeready allows customers to scan black and white or color documents and save them as RDO (Raster Document Object) or Adobe PDF (Portable Document Format) files. Makeready provides two options for saving scanned documents as PDFs: a *Xerox* option and an *Acrobat* (Distiller) option. Both options produce an Adobe PDF file, however, the resulting file size may vary depending on the option selected and/or the scanner driver.

Performance at a Glance

		Reference Scanner	Xerox DocuMate 4799
Scan Speeds (20 page, 8.5" x 11" landscape document at 600 dpi)			
Black & White	Simplex	●	●
	Duplex	○	●
	File Size	●	●
Grayscale¹	Simplex		●
	Duplex		●
	File Size		●
Color	Simplex	●	○
	Duplex	●	●
	File Size	●	●
Overall		●	●

○ Fair ● Good ● Very Good

¹ In order to simulate grayscale (8 bits per pixel), the Reference Scanner captures halftone images at 1 bit per pixel (black and white) and renders them using halftone screening. Refer to *Image Quality* for more information

Scanning Speeds

The following tables show the speed of the Xerox DocuMate 4799 compared to the Reference Scanner based on a 20 page, 8.5" x 11" landscape document (mix of black and white, and color text and images) scanned at 600 dpi, as well as the size of the resulting file that was captured and saved in RDO and Adobe PDF file formats in FreeFlow Makeready.

Black and White

Simplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed	25 seconds (1.2 sec/page)	31 seconds (1.5 sec/page)
RDO file size	22.5 MB	27.6 MB
Save as PDF with Xerox option	21.3 MB	27.1 MB
Save as PDF with Acrobat option	21.3 MB	27.1 MB

Duplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed	115 seconds (5.75 sec/page)	32 seconds (1.6 sec/page)
RDO file size	22.6 MB	27.8 MB
Save as PDF with Xerox option	21.4 MB	27.5 MB
Save as PDF with Acrobat option	21.4 MB	27.4 MB

Grayscale¹

Simplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed		57 seconds (2.85 sec/page)
RDO file size		59.1 MB
Save as PDF with Xerox option		326.4 MB
Save as PDF with Acrobat option		60.4 MB

Duplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed		80 seconds (4.0 sec/page)
RDO file size		68.6 MB
Save as PDF with Xerox option		365.3 MB
Save as PDF with Acrobat option		70 MB

¹ In order to simulate grayscale (8 bits per pixel), the Reference Scanner captures halftone images at 1 bit per pixel (black and white) and renders them using halftone screening. Refer to *Image Quality* for more information

Color

Simplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed	37 seconds (1.85 sec/page)	77 seconds (3.85 sec/page)
RDO file size	139 MB	68.9 MB
Save as PDF with Xerox option	44.7 MB	66.6 MB
Save as PDF with Acrobat option	142.4 MB	70.4 MB

Duplex/Landscape (600 dpi)

	Reference Scanner	Xerox DocuMate 4799
Scan Speed	115 seconds (5.75 sec/page)	110 seconds (5.5 sec/page)
RDO file size	159 MB	84.1 MB
Save as PDF with Xerox option	64.6 MB	88.7 MB
Save as PDF with Acrobat option	163.4 MB	85.9 MB

Summary

The Xerox DocuMate 4799 achieves fast scanning speeds for duplex (two-sided) black and white and grayscale documents as a result of the Duplex Automatic Document Feeder (ADF), which supports simultaneous two-sided scanning— and speeds, on average (simplex/duplex), which are comparable to the Reference Scanner for color documents for most scanning applications.

While not as efficient at transferring large amounts of data as the SCSI interface on the Reference Scanner, the Hi-speed USB 2.0 interface on the DocuMate 4799 is suitable for most scanning applications, offers the added convenience of plug and play and does not require adding a separate controller board to the PC.

Saving files to PDF using the Xerox option produces noticeable larger file sizes for grayscale documents and is not recommended.

Image Quality

A variety of industry standard test patterns and images were used to objectively evaluate the Xerox DocuMate 4799 and its ability to accurately capture (and reproduce) fine detail (text and line art), or shades of gray and different colors (color depth). Both the Xerox DocuMate 4799 and the Reference Scanner support 24-bit color depth and are capable of assigning one of 16.8 million values to a color. For scanning monochrome or grayscale images, the Xerox DocuMate 4799 supports 8-bit grayscale (1-bit black and white) while the Reference Scanner supports 1-bit black and white.

Note

In order to simulate grayscale (8 bits per pixel), the Reference Scanner captures halftone images at 1 bit per pixel (black and white) and renders them using halftone screening at different frequencies (lpi – lines per inch) based on the content of the document (fine or course halftone) versus the Xerox DocuMate 4799, which renders a grayscale image at 8 bits per pixel. As a result, the Xerox DocuMate 4799 is capable of reproducing images that more closely approximate the original document

The captured digital images were then **compared to equivalent scans (digital images) obtained from the Reference Scanner, which served as the baseline, or reference for comparison.** The results of this comparison have been documented below. All scans were captured independent of applying image enhancement software, which might otherwise improve or enhance the appearance of the images during or post-capture.

Image Quality Evaluation¹

	Xerox DocuMate 4799	Assessment
<p>Black and White</p> <p>Scans the image bi-tonal, where everything on the page is either black or white</p>	●	<ul style="list-style-type: none"> • Better reproduction (clarity) of fine text and line art compared to the Reference Scanner • Not suitable for reproducing grayscale or color graphics
<p>Grayscale</p> <p>Scans the image using varying shades of gray to reproduce the document</p>	●	<ul style="list-style-type: none"> • Good overall reproduction of shades of gray – variations from black at the weakest intensity to white at the strongest, and Tonal Reproduction Curve (TRC) – luminance, or brightness of the image, compared to the Reference Scanner • May experience Moiré (interference pattern or artifact) in certain images
<p>Color</p> <p>Scans the image in color, creating a full color copy of an original document</p>	●	<ul style="list-style-type: none"> • Acceptable overall reproduction of color (color depth/balance), especially in highlight areas compared to the Reference Scanner • Acceptable Tonal Reproduction Curve (TRC) – graduations of Cyan, Magenta, Yellow or Black (CMYK) from 0 -100%, compared to the Reference Scanner • Good reproduction (color and clarity) of fine lines and color text compared to the Reference Scanner • Light color text on light backgrounds may appear fuzzy in certain color combinations
Overall	●	

○ Fair ● Good ● Very Good

¹ Compared to equivalent scans from the Reference Scanner

Summary

The Xerox DocuMate 4799 is capable of reproducing color images suitable for most scanning applications with acceptable results in comparison to the Reference Scanner. To achieve the best results, Customers should ensure that they have the latest drivers, which can be downloaded at www.xeroxscanners.com. You will need both the Visioneer DriverPLUS driver and Acuity Image Processing software.

The Xerox DocuMate 4799 achieves very good results for black and white (bi-tonal text and line art), and acceptable results for grayscale scanning applications; producing captured images that are, in some cases, comparable to the Reference Scanner. Black and white mode should not be used to reproduce grayscale or color images.

Support

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Support for the Xerox DocuMate range of scanners is provided directly by Visioneer. All DocuMate scanners come with US-based, toll-free technical support by contacting Visioneer at 1(800) 648-0410. Warranties are valid in the U.S. and Canada. An online Knowledgebase for troubleshooting and support information is also available 24/7 at www.xeroxscanners.com.

Note

If you require training and/or support for FreeFlow Makeready, or the Makeready Scan and Print application, contact your local Xerox Analyst for assistance. The scope of support provided by Visioneer for the Xerox DocuMate scanners as part of the initial installation is limited to installing the scanner and device drivers, and performing a test scan to validate operability.

Service/Maintenance Kits

Over time, all scanners require occasional cleaning and maintenance in order to keep the product in good working order. Visioneer offers maintenance kits that may be purchased to maintain the scanner. Each kit contains cleaning supplies, as well as replacement rollers, and pads.

Frequent paper jams are a symptom of a worn roller assembly. A worn roller can cause documents to feed in skewed at an angle, or multiple pages to feed at the same time. A worn roller should be replaced to avoid damage to the scanner's internal parts. Before replacing the roller you should clean it as excessive dust on the roller will make it appear worn and smooth. For questions regarding replacement parts or ordering information, refer to the scanner User's Guide or contact your local authorized Visioneer distributor.

FreeFlow Scanner Support

Comprehensive TWAIN support falls outside of the Xerox Field Service Maintenance Agreement (FSMA). Issues found with FreeFlow Makeready and a supported Xerox DocuMate scanner will only be addressed if they can be reproduced on a reference scanner available to the Xerox Customer Support Center (XCSC).

In addition, the following limitations may apply when scanning from Makeready via a supported Xerox DocuMate scanner and the TWAIN (version 1.9 or above) interface:

- Image quality or performance-related problems are not supported
- Optimization and targeting for a particular Xerox black and white or color printer is not supported
- The [Fit to output stock size] selection under [Reduce/Enlarge] in FreeFlow Makeready is not supported
- The input page size passed from the *FreeFlow Makeready Scan and Print* user interface may not match *Data Source* capabilities and, thus, may not be effective. To choose an exact input page size, customers should make a selection from the [Advance Scanning] user interface
- The [Rotate] selection under [Image Orientation] in FreeFlow Makeready is not supported

- The following options in FreeFlow Makeready will be disabled if the parameter is not supported by the data source:
 - [2 sides] selection under [Sides to Scan]
 - [Color] selection under [Mode]
 - [Scale to] selection under [Reduce/Enlarge]
 - [Brightness] slide control

For more information, refer to the *FreeFlow Makeready 9.0 Customer Expectations Document* (CED).

